

Reverse osmosis units

EUROWATER
A GRUNDFOS COMPANY

Reliable reverse osmosis units

EUROWATER has many years of experience with development and manufacturing of long-life water treatment units with high reliability of operation and low operating costs.

Demineralized water - without use of chemicals

Reverse osmosis (RO) units are used for production of demineralized water. RO units retain more than 98 % of the salts in the water and remove pyrogenic substances as well as microorganisms. The RO process is chemical-free and causes no wastewater problems.

Industrial applications

The units are used for production of process water, boiler water, district heating water, cooling water, rinse water, laboratory water as well as water for humidification etc.

The optimum solution

Selection of unit depends on application, water quality, and water consumption. We are at your service to ensure the optimum solution based on our combined knowhow.

Flow rate up to 60 m³/h

EUROWATER produces RO units with capacities up to 60 m³/h. The capacity depends on operating pressure, salt content, and temperature. Increasing pressure and temperature as well as decreasing salt content will enhance capacity. The optimum solution is individual and requires correct selection of pump, membrane type, instrumentation, and unit construction.

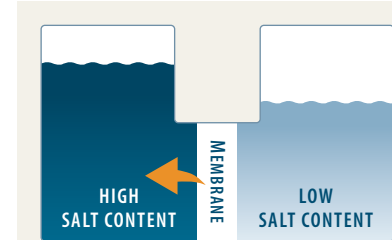
Trouble-free operation

Proper pre-treatment of the inlet water is a necessity for continuous, smooth system operation. The purpose of pre-

treatment is to prevent clogging of the membranes with precipitations and suspended solids and to remove free chlorine.

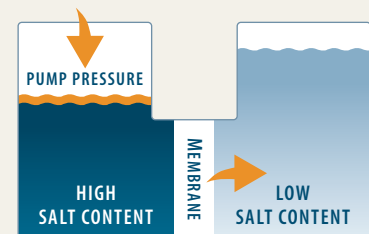
Hardness minerals clogging the membranes are removed in a softener. Softening can also be achieved through dosing of antiscalants that keep hardness minerals dissolved.

A filter with a density of 1 µ protects the RO membranes against suspended solids. Free chlorine in the water can be removed in an activated carbon filter.



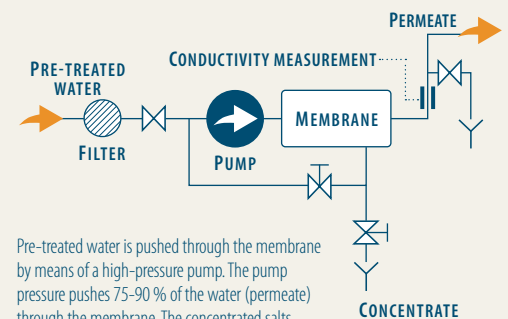
Natural osmosis

When a semi-permeable membrane separates two liquids of different salt concentrations, water from the low solute concentration will move through the membrane to the high solute concentration to equalize solute concentrations on each side of the membrane.



Reverse osmosis

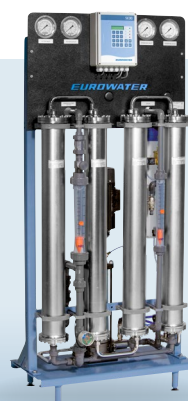
By applying pressure to the high solute concentrate, the water flow is reversed and demineralized water is forced through the membrane.



Pre-treated water is pushed through the membrane by means of a high-pressure pump. The pump pressure pushes 75-90 % of the water (permeate) through the membrane. The concentrated salts (concentrate) are discharged to drain.



CU:RO - flow rate up to 2 m³/h
Compact RO system with complete pre-treatment including softener and pre-filter. Plug and Play!



RO B1 - flow rate up to 2.4 m³/h
Pressure vessels of stainless steel.
One 4" membrane in each pressure vessel.



RO B2 - flow rate up to 8 m³/h
Pressure vessels of stainless steel.
Two 4" membranes in each pressure vessel.

Cleaning-in Place (CIP) system

At regular intervals, the membranes must be cleaned to remove precipitations caused by calcium salts or bio-fouling. These cleanings are performed using a separate cleaning unit. Our RO units are equipped with quick couplings for quick and easy on-site cleaning of membranes.

Water quality

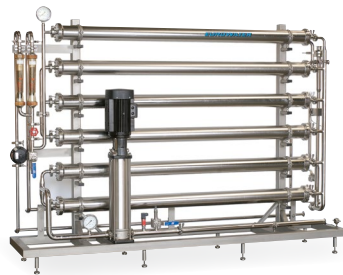
RO units typically supply water qualities with conductivities under $15 \mu\text{S}/\text{cm}$. If two units are connected in series so that the second unit further treats the water, the conductivity can be reduced to under $2 \mu\text{S}/\text{cm}$. The units are supplied integrated and the system is known as double-pass reverse osmosis (DPRO).

If ultra-pure water with a very low conductivity is required, post-treatment is applied to reduce conductivity to as low as $0.06 \mu\text{S}/\text{cm}$. For post-treatment, either a mixed-bed ion exchange unit or an electro-deionization (EDI) unit is applied.

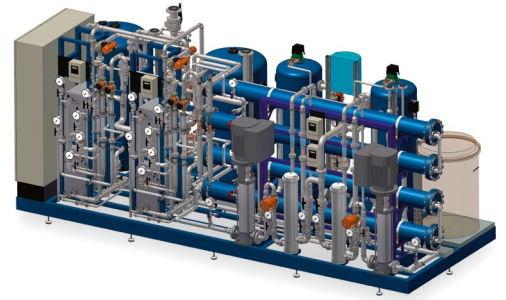
The EDI process runs continuously and uses no chemicals. Since CO_2 passes through the membrane, dosing or membrane degassing can be applied to reduce the CO_2 content.

Custom-made units

We offer many possibilities of custom-made solutions. Almost all parameters and components can be varied and combined. EUROWATER has great experience in producing pipe systems of other materials than PVC such as PP, PE, PVDF, and stainless steel.



RO system of stainless steel



Complete, frame-mounted water treatment unit for production of demineralized water. The system comprises carbon filtration, softening, reverse osmosis and EDI.



SCAN HERE TO SEE A FILM ABOUT FRAME MOUNTED PLANTS.



Complete solution

EUROWATER has a complete product range of units for pre- and post-treatment. Selection of solution depends on individual conditions.

Save water!

RO-PLUS is a series of RO units characterized by an extra high water recovery - up to 90 % - without compromising operating safety or water quality. RO-PLUS units are offered both as new units and as upgrade of existing units. The upgrades are easy to implement and the payback period can be as low as 6 months.

Fully documented service

We offer fully documented service to you by way of a service report. Servicing comprises a large number of checkpoints in accordance with a check list and a maintenance plan. Work is done based on written procedures to ensure high and uniform quality.

A service agreement with EUROWATER ensures that service frequency and extent are individually planned based on application, operating conditions, and a risk assessment.

We have local service technicians all over Europe. Our service cars are equipped with a broad range of spare parts. Almost always, we will be able to solve your problem on site and quickly ensure that your RO unit runs steadily again.



RO C3 - flow rate up to $45 \text{ m}^3/\text{h}$

Pressure vessels of steel coated with polyethylene. Three 8" membranes in each pressure vessel.



RO C4 - flow rate up to $60 \text{ m}^3/\text{h}$

Pressure vessels of steel coated with polyethylene. Four 8" membranes in each pressure vessel.

RO units in industrial design

Technical know-how and selected high-quality components in combination ensure the compliance of the units with the highest industrial standards.

Compact units

The RO unit is mounted on a robust steel frame and comprises the following main components: PVC pipe system in inlet and outlet, high-pressure piping of stainless steel, stainless steel pump, dry-run protection, pre-filter to protect membranes, flow meters on permeate and concentrate outlets, pressure gauges before and after pre-filter and membranes, conductivity meter and control as well as board with motor protection.

Steel pressure vessels

The pressure vessels are either of stainless steel or steel coated with polyethylene. This makes them very indifferent to pressure changes, thus ensuring a long life and leakage protection. At the same time, the pressure vessels are extremely corrosion resistant.

Low-energy membranes

EUROWATER continuously follows developments of new membrane types and optimizes the product range to ensure our customers the best solution both as to operating costs and water quality.



User-friendly control with analog quality monitoring

Each unit comes with a SE30 PLC that controls and monitors the RO unit and the softener, if any. The control is purpose-made and programmed by our own engineers. The simple interface makes it easy to control and monitor unit operation including configuration of pre-rinse, quality rinse, post-rinse, and limit values for water quality.

The control communicates with a flow switch to protect the RO pump against failure. In the event of a failure, the control stops the system, enters into alarm mode and the failure cause is displayed.

The RO units is fully automatic. All functions and processes are continuously monitored including temperature-compensated conductivity measurement. The control displays current conductivity and can send signals to for instance a central control board via analog output.

Pumps of superior quality

Standard RO units are equipped with energy-efficient high-pressure pumps in which all parts in contact with liquid as well as top and bottom sections are of stainless steel. Choose between steel quality AISI 304 or AISI 316.

It is also possible to equip pumps with frequency-controlled motors. All motors meet - or exceed - the latest environmental requirements for energy efficiency laid down in the IE efficiency standard of the EuP directive.

For more information

Please contact us for further information on flow rates, dimensions, connections, alternative materials etc.

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